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'ROYALTON' BLACK SWEET CHERRY

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INTRODUCTION

The sweet cherry (*Prunus avium*) breeding program at the Geneva Experiment Station has been seeking better adaptation to New York's climate. Reliable cropping is essential for successful orcharding with this weather sensitive crop. Our tests spanning parts of the professional careers of three faculty and two senior research technicians have provided the basis for the release of 'Royalton' in 1991. This variety is patented and marketed nonexclusively by the Cornell Research Foundation.

'Royalton' was released as a late mid-season, fresh market, black sweet cherry with exceptionally large fruit size and excellent quality. It is similar in ripening time to 'Hedelfingen' and seems destined to fill some growers' hopes for a large, crack tolerant, black cherry to replace the smaller, softer 'Hedelfingen.'

ORIGIN

The 'Royalton' cherry originated as an open-pollinated 'NY 1725' seedling grown from seed planted in 1968. It was selected in 1975 because it had large, high quality fruit. It was designated 'NY 11390' and grafted in 1976 to make trees for further testing.

TESTING

Between 1978 and 1986 scientists at the Geneva Experiment Station planted and evaluated two test orchards which included small numbers of trees of 'Royalton.' They also sent propagation wood to public researchers in Michigan and helped establish grower-cooperator tests, two in



Figure 1.—*Royalton* black sweet cherry.

Western New York near Royalton Center and Waterport; one in Marlboro, NY in the Hudson Valley fruit district; and one at the head of the Chesapeake Bay near Elkton, MD.

Members of the Fruit Testing Association Nursery, Inc. also had access to 'Royalton' as a numbered selection deemed worthy of trial. It has had the same merits and faults wherever it has been tested. Its primary merits are large and high quality fruit. Its primary limitation has been its slowness to come into full production.

TREE

In all trials from which we have had reports 'Royalton' trees have been similar in their slowness to start cropping well. They are a lot like 'Hedelfingen' in this trait. However, the tree's habit of growth is much different from 'Hedelfingen.' 'Royalton's' tree is exceptionally upright and vigorous and has few lateral branches. Trees require careful attention in training years to choose scaffold limbs which have wider angles. They usually require special spreading techniques like limb tie-downs and/or use of growth regulators which induce greater lateral branching thereby helping to encourage earlier flowering. Most trials have used *Prunus avium*, Mazzard seedling rootstocks that are notoriously slow to begin fruiting for all sweet cherry cultivars. Recent tests with 'Royalton' that utilize 'Damil' and some of the Gisela Series of more precocious rootstocks have just begun flowering. It is not yet known if they will induce better tree structure and bearing tendencies for 'Royalton.'

POLLINATION

Trees of 'Royalton' were tested over several blossom seasons to ascertain their pollenizer group. Pollen of 'Royalton' effectively pollinizes most selections and cultivars. It usually gives ineffective pollination results with 'Schmidt' as the female seed-parent, but the reciprocal hybridization performed in 1992 gave inconclusive results. We now believe that 'Royalton' belongs to Group VIII (S2S5), as does 'Schmidt'. If this is true, commercial orchards should not be planted with this cultivar. With respect to spring timing of bloom period, we have found 'Royalton' to be earlier than many cultivars and selections. We have a test orchard of semi-commercial scale near Waterport, NY which has 'NY 3308' (with mid-season bloom time), 'Royalton' (with early season bloom time), and 'NY 6476' (with very early season bloom time). This young orchard has to date had heavy crops of 'NY 3308' and 'NY 6476' but only modest fruit set and yield on 'Royalton.' Finding another early season blossoming, compatible cultivar for pollenizing 'Royalton' is needed.

FRUIT

Fruits of 'Royalton' take about 60 days from full bloom to harvest and are very large, frequently three centimeters (well over one inch) in diameter, even with good fruit set conditions. The individual fruits are round-oblate (slightly wider than they are long), their skin color is very deep

greyed-purple. Their flesh color is a slightly lighter shade of deep purple. Fruit sugar levels are usually between 18 and 20 per cent, and their taste has been judged as excellent by experts. The firmness of 'Royalton' fruits is better than 'NY 3308' and similar to 'Schmidt,' nearly equal to 'Bing.' They are somewhat crisp in texture (mouthfeel) at optimum maturity. Resistance to moisture stress induced fruit cracking is high, comparing favorably to the crack-resistant 'Ulster' and 'Kristin,' two cultivars released from Geneva's past breeding efforts.

PESTS

Virus-free propagating wood of 'Royalton' is available, but the cultivar is not known to be resistant to infection by viruses transmitted by pollen or grafting. 'Royalton' has not been tested experimentally for the degree of its susceptibility to common sweet cherry diseases, such as brown rot, fungal cherry leaf spot, or bacterial canker. Some evidence exists of greater bacterial canker susceptibility than 'NY 3308' possesses. If this is true, the 'Royalton' cultivar may need special attention to control this disease in mild, nonarid climates (where the pathogenic *Pseudomonas* species that attack sweet cherries are more prevalent). A fully integrated pest management program will be needed wherever it is grown since it has no proven resistances to common insects or bacterial and fungal diseases.

COMMERCIAL USEFULNESS

Fruit quality and size of 'Royalton' are so exceptional that the cultivar should be considered for fresh market uses. This means that hand harvesting fruits with stems attached will be preferred by many wholesale markets. To facilitate such production, an orchard system is needed that dwarfs 'Royalton' trees and starts them into earlier cropping. Fortunately such new technologies are in use in some sweet cherry production regions. They offer hope that cultivars like 'Royalton' might be more manageable from an orchard point of view. Examples of such techniques are trellising, root restriction devices, dwarfing rootstocks, and the use of growth regulators to induce better branching and earlier flowering. Combinations of these same orchard technologies will also apply to roadside and U-pick market producers.

AVAILABILITY

Cornell Research Foundation has applied for plant patents on 'Royalton' and has applied for trademark of this name. Nonexclusive licensing arrangements with responsible nurseries are being made through Cornell Research Foundation, Inc., Cornell Business and Technology Park, 20 Thornwood Dr., Suite 105, Ithaca, NY 14850. Trees will continue to be available from the Fruit Testing Association Nursery, Inc., NYSAES, Hedrick Hall, Geneva, NY 14456, as well as from licensed commercial nurseries.

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